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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,567	06/18/2007	Werner Schubert	2360 0997 US	2723

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D-70032 STUTTGART,
GERMANY

EXAMINER

WEISS, PAMELA HL

ART UNIT	PAPER NUMBER
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1797

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,567	Applicant(s) SCHUBERT ET AL.	
	Examiner PAMELA WEISS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/16/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The term "densely sintered" in claim 8 is a relative term which renders the claim indefinite. The term "densely sintered" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. (US 2003/0068106) in view of Niwa et al. (US 6498127B1)

Regarding Claim 8.

Greene et al. discloses a slide bearing material, comprising:

a metallic support layer ([0008] steel backing); and

a lead-free bearing layer comprising ([0020] the bearing material is lead free) and ([0024] bismuth serves as a substitute for lead)

densely sintered metallic powder particles ([0021] powder metal bearing material is sintered again to develop essentially a porous free fully densified layer), said powder particles consisting essentially of

9.5 to 11 weight % of tin, ([0042] 9-11% tin)

7 to 13 weight % of bismuth, ([0042] 1-10% bismuth)

0 to 4.0 weight % of zinc, ([0042] 0.5% zinc)

the rest copper, and ([0042] base of copper)

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impurities of an overall amount of less than 1 weight %, ([0020] impurities less than about 0.5% and [0042] where remaining components are from 0.3-2.2% including phosphorus)

Greene discloses the tin and bismuth in overlapping ranges thus meeting the claim limitations. See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

Greene et al. does not disclose the shape of the copper alloy particles wherein the powder particles have a bulbous shape, differing from a regular spherical shape, but without edges and undercuts.

Niwa et al. discloses a composite material of sintered copper alloy applicable to bearings (C1 L5-8 and L55-60). Niwa also discloses the particles to be of a bulbous shape (See Figures 1 and 2, 2a) or other form which can be non-spherical (C2 L42-44). Niwa et al. discloses that with respect to the thickness of the alloy particles or the number of superimposed alloy particles which constitute the alloy layer, the smaller number of particles the smaller the sliding contact resistance becomes. (C2 L30-43)

It would have been obvious to a person having ordinary skill in the art at the time of invention to use the bulbous shaped particles of Niwa et al. in the alloy powder of Greene et al. in order to provide the optimal desired thickness and sliding resistance of the alloy layer.

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Regarding Claim 9.

Modified Greene discloses the limitations set forth above.

Modified Green et al. does not expressly disclose the slide bearing composite material particle or grain size at all or wherein a grain size distribution of said metallic particles has a characteristic grain size of 40 to 75 μm or of 40 to 60 μm .

Niwa et al. discloses a composite material applicable to bearings. (C1 L5-8). Niwa et al. also discloses a steel plate with a sintered (C1 L55) copper alloy powder having an average particle size of 7 μm (C3 L3-6). Niwa et al. discloses the particle size may not be smaller than 25 μm as it may affect bonding strength with other layers of the bearing materials. (C2 L26-30) Niwa discloses a sintered copper alloy powder with an adjusted average particle size of 75 μm (C3 L3-7)

It would have been obvious to a person having ordinary skill in the art at the time of invention to use the particle size of Niwa et al. for the alloy powder of Modified Greene as Niwa et al. discloses the particles size of 75 μm as being suitable for a sintered copper alloy powder to be spread on a back metal (C3 L1-6).

Regarding Claim 10:

Modified Greene et al. discloses the limitations set forth above.

Modified Greene discloses the boded bearing layer has a matrix of copper and tin with bismuth dispersed throughout the copper tin matrix. ([0023]) The particles to be of a bulbous shape (See Figures 1 and 2, 2a) or other spherical or other form (See Niwa C2 L42-44).

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Modified Greene et al. does not expressly disclose the slide bearing composite material wherein a grain size distribution of said metallic particles is characterized by a shape parameter beta of 1.2 to 2.6. However, the spherical and other shaped particles implicitly disclose a grain size distribution characterized by a shape parameter beta, overlapping or encompassing the claimed range of 1.2 to 2.6.

Regarding Claims 11 and 12:

Modified Greene et al. discloses the limitations set forth above. Green et al. also discloses the slide bearing material wherein said powder particles comprise 7 to 11 weight % of bismuth or 7.5 to 10 % by weight of bismuth. ([0042] 1-10% bismuth)

Greene discloses the bismuth in overlapping ranges thus meeting the claim limitations. See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

Regarding Claim 13.

Modified Greene et al. discloses the limitations set forth above. Green et al. also discloses the slide bearing material of claim 8, wherein said powder particles comprise 9.5 to 10.5 weight % of tin. ([0042] 9-11% tin)

Greene discloses the tin in an overlapping range thus meeting the claim limitations. See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

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7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. (US 2003/0068106) in view of Niwa et al. (US 6498127B1) as applied to Claim 8 above further in view of Niegel et al. (US 6,301,784)

Regarding Claim 14.

Modified Greene et al. discloses the limitations set forth above.

Modified Greene et al. also discloses an engine bearing, pin bushing and wrist pin or piston constructed from the composition. ([0019])

Modified Greene does not explicitly disclose a slide bearing bushing or shell, a connecting rod bearing bushing, a connecting rod bearing shell, or a main bearing shell, produced from the slide bearing composite material of claim 8

Niegel et al. discloses a lead free composite multilayer material (C2 L55-58) for bearing shells which may contain a bearing layer of copper and tin (C3 L24-26) and may contain bismuth (C3 L 29-30)

It would have been obvious to a person having ordinary skill in the art at the time of invention to use the composition of Modified Green et al as a bearing shell as Niegel et al. disclose the use of copper tin alloys containing bismuth for this purpose which is consistent with the uses of Greene.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAMELA WEISS whose telephone number is (571)270-7057. The examiner can normally be reached on Mon.-Thur. 7:00am-5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

pw

/Glenn A Caldarola/
Acting SPE of Art Unit 1797